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THE QUICK LIFTER LIGHTWEIGHT CRANE?

The 'aluminium' truck and trailer crane concept, once a peculiarity of the German crane market, is steadily gaining traction in other countries such as France and the UK. Rental companies are finding that they can handle far more jobs than their nominal capacity suggests and are extremely cost effective particularly for lifting loads such as roof trusses, air conditioning units and solar panels. Mounted on a commercial chassis, the aluminium truck crane costs less than an All Terrain, it benefits from lower maintenance costs because of the extensive service network and lower running costs with cheaper replacement parts. It is also more fuel efficient, has a faster road speed and can be quicker to set up on site.

C&A has covered 'aluminium' boomed truck cranes for many years however there are still only two major manufacturers in the market - Klaas and Böcker. When it comes to trailer cranes, Paus makes it three. All are made in Germany.

However, when looking at the truck cranes only Klaas is now producing an all-aluminium boomed range. Böcker has been increasingly adding steel to its booms, and now only one of its truck cranes features an all-aluminium boom - the AK46/6000. According to chief executive Alexander Böcker this is set to be replaced next year by the steel boomed AK48. Böcker still uses all aluminium booms for its trailer cranes although its largest model - the AHK36 - features a steel base boom section.



Böcker AK46/6000

"Using steel allows a larger profile boom which can accommodate all the hydraulics and electronics internally, giving a cleaner boom section which customers prefer," he says. "Aluminium is lighter but has a thicker wall making it difficult to fit everything within. If you start with a steel boom base section it makes sense to continue to use steel - it is easier to produce, more precise and easier to install."

Klaas on the other hand continues with aluminium booms.

TIME TO RENAME THE PRODUCT SECTOR?

Given the trend away from aluminium towards high strength steel, perhaps the term aluminium crane is defunct? Lightweight truck mounts? Commercial truck mounts? But then that ropes in the four axle cranes from Tadano, Liebherr and some Italian manufacturers which are quite different beasts.

"Based on two and three axle commercial chassis, this type of lightweight crane is designed to lift smaller loads as far and as high as possible," says Böcker. "It is a different concept to a loader crane or an All Terrain. Some people call them Quick Lifters due to their speed on the road



**Böcker AHK36
steel boom**



Klaas K950

Alexander Böcker



and in setting up, so a Quick Lifter or Quick Lifter Lightweight crane would seem appropriate.”

QUICK LIFTER CUSTOMERS

The companies buying this type of crane, have seen the benefits for certain types of lift compared to the alternatives. In some ways it is similar to spider cranes or mobile self-erecting tower cranes where the nominal capacity is not a particularly relevant factor. They require a buyer with deep knowledge of their customer’s applications, and the sales people capable of selling a new concept. At the moment they are only popular in countries with high labour costs and a particular style of building/construction. Hence the vast majority are sold in Europe - particularly Germany, Belgium, the UK and France.

“We have sold a few units in the USA and some in New Zealand and Australia, but Europe is our main market,” says Böcker. “The problem with selling truck mounts into the US is the differing road regulations so in that market we currently focus on trailer cranes such as the AHK 36. We are concentrating on our existing European markets which still have good growth potential particularly with new technology such as electric engines and battery power.”

Like many equipment manufacturers, the sector has had a very challenging past few years with Covid, supply chain issues and rising prices. The availability of chassis has particularly affected production and for some products Böcker is now quoting deliveries out to the second quarter of 2024 - a combination of the recent issues which has led to products scheduled for delivery last year being carried over into 2023. To reduce the

extended delivery times, Böcker is moving into a new 2,400 square metre assembly hall this month and will open another 1,600 square metre facility in August.

“The vast majority of chassis we use are MAN and Mercedes - a German truck for a German crane company,” he says. “However, for our newer cranes such as the AK42, AK48 and AK52 we can also offer Volvo and Scania, this is particularly true for the UK due to historical preference and service arrangements.”

The extended lead times are also contributing to the high prices for used cranes, In the UK a recent auction of 14 cranes from NMT Crane Hire saw a five year old Böcker AK 42/4000 fetch £197,000 - probably not far off what it cost when new. It also saw a 2007 Spierings SK2400 AT7 go for £242,500 after 15 years in the fleet.

PRODUCTION NUMBERS

Current estimates would suggest that last year the two main players in the aluminium crane sector - Klaas and Böcker - together produced a total of about 900 truck and trailer cranes. Böcker claims to build about 500 of this figure. When Paus is added in the total is about 1,000 machines - about 60 percent being trailer cranes.



Paus PK 27 trailer crane



Böcker AHK36 drive



Böcker AK37/4000 Hybrid



A Böcker AK42

ALL-ELECTRIC BÖCKER AK48E

Böcker’s new six tonne all-electric AK48e is mounted on a 27 tonne, battery powered Mercedes eActros electric chassis which uses three lithium-ion battery packs giving a range of around 300km between charges. Once on site the crane uses the battery pack to operate an electric powered pump. The recharging time is said to take an hour and 15 minutes, taking the battery from 20 to 80 percent. The crane can also operate while plugged into a 160kW charging point.

As with the diesel AK48, the new crane has a standard three tonne maximum capacity at a 15.5 metre radius and maximum hook height is 33 metres. Many companies will opt for the six tonne option which the crane can handle at 8.5 metres and take to a height of 18.5 metres. The crane features a four section steel lower/main boom topped by a three section aluminium upper boom/telescopic luffing jib, with the option of a three metre inline extension, taking the maximum tip height to 52 metres and the maximum radius to 41 metres.

The AK48 offers an additional benefit over most other ‘aluminium’ truck cranes, in that the main boom can be elevated to 90 degrees, while the upper boom can luff though 180 degrees and operate in the horizontal position. This provides a tower crane like configuration with a clearance under the top boom/jib of 34.7 metres and a fully extended radius of 14.4 metres with a capacity of 1,000kg. If the three metre extension is installed the radius increases to 17.3 metres with a capacity of 500kg.

The AK48 has an outrigger spread of 6.1 metres or 4.23 metres with one side only extended. Slew is 360 degree continuous similar to the AK42, AK48 and AK52 and the AHK30 (KS) and AHK36 trailer cranes.

At the end of last October, the crane exhibited at Bauma was driven the 772km from Böcker’s production facilities in Werne, to Munich. Böcker employee Jörg Mehllage drove the Mercedes eActros based crane finding ‘truck suitable’ charging points along the route via an e-mobility app. Its 300km range offered plenty of flexibility in selecting the next charging location.



Böcker AK48e at Bauma



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Aluminium trailer cranes are a totally different product altogether appealing to a different customer base. They are popular in markets accustomed to towing a long trailer mounted product behind a big 4x4 or small truck, such as central Europe and Scandinavia. Demand in the UK on the other hand is limited.

“We have sold a few in Scotland but there is very little demand in the UK,” says Böcker. “The trailer crane is about nine metres long and as far as I am aware big trailers in the UK are not that common. Also, the UK towing regulations limit their use. In the rest of Europe trailer cranes can be towed by a large 4x4, van or pick-up truck.”

CHANGES TO UK TOWING LAWS

The UK towing laws were revised at the end of 2021 although with the Covid pandemic probably very few are aware of the fact. Before the change the regulations were not as clear as they might be, they seemed to suggest that if you obtained your licence before 1st January 1997 - you are older than 43 - there are no changes in that you are allowed to drive a vehicle and trailer combination up to 8,250kg maximum authorised mass (MAM). As the trailer cranes are about 3,500kg there is no problem although logically the towing vehicle should be heavier than the item it is towing.

However, licences issued after 1st January 1997 allow you to drive a car or van up to 3,500kg MAM towing a trailer up to 750kg - so up to 4,250kg MAM in total. You can also drive a trailer over 750kg (i.e., a trailer crane) as long as it weighs no more than the unladen weight of the towing vehicle (up to 3,500kg). Unfortunately to tow a trailer crane you would have had to take an additional car and trailer driving test ... Oh and have a towing vehicle with an unladen weight heavier than the trailer crane.

The good news is that from 16th December 2021 up to 40 somethings CAN tow trailers up to 3,500kg although you should check your car/van's handbook to find its gross train weight (GTW) - the total allowable weight of the car plus the trailer plus any load. This means all UK licences will have Category BE added when renewed.

In effect this removes the towing issues for ‘younger’ drivers - as long as the total weight is within the towing vehicle's GTW - which could make the trailer crane more attractive in the UK and countries with similarly restrictive driving licence regimes. The smallest trailer crane from Klaas - the K280 which has a 25.5 metre hook height and 18.5 metres radius - weighs 2,800 to 3,000kg. The smallest Paus trailer - the 1,000kg/26.5 metre PTK 27 - weighs 2,900kg and has an overall length of 8.15 metres.

Klaas K280



Böcker AHK36



Klaas K950



Böcker AK48e



Böcker AK52

DIFFERENT MENTALITY

Another reason the UK has not opened its arms to trailer cranes - or self-erecting tower cranes - is that telehandlers are traditionally preferred for moving and lifting building materials on site. The HSE has been pushing for a change, in order to reduce worksite traffic - a major source of accidents - for some time, while ever tighter sites might help change that. The ongoing energy crisis are also increasing demand for roof mounted solar panels - another perfect application for aluminium cranes.

DEVELOPMENTS?

The whole construction equipment manufacturing sector has gone ‘electric crazy’ over the past year or two. Certainly, in the short term electric power appears the way forward however there are an increasing number of companies such as JCB that are actively pursuing the hydrogen alternative.

The best combination for mobile cranes, in terms of the emissions vs cost equation are the hybrids that use the very latest diesels to power the chassis and a plug-in/ battery pack for the superstructure, allowing the crane to work with minimal noise or CO2 emissions when on site.

“At the moment it is the hybrid version that is most popular it uses the truck's combustion engine on the road and an electric motor to power the superstructure with or without a battery pack,” says Böcker. “The trailer cranes can be battery powered and can recharge when plugged into a single phase source. We have already sold more than 40 units of the electric AHK36 version. The AK37e truck crane is also capable of recharging using a household socket.”

The diesel powered AK48 will be Böcker's best

seller, but it is also available as a hybrid version alongside the hybrid AK37e, and at Bauma the all-electric AK48e was launched. These developments have been driven by the market and customers particularly in countries such as the Netherlands which is a little further ahead of most other markets in terms of electrification due to legislation.

“If you are looking at reducing the CO2 footprint of cranes then electric power makes perfect sense,” says Böcker. “In bigger cities electric is the way to go. In the Ruhr area of Germany for example, there are special environmental zones dictating the type of engines that can be used. With our cranes flexibility is very important so in rural areas there will be many years of hybrid powered machines - our petrol/diesel engines are very efficient, and we will concentrate on making the hydraulic systems more efficient and reduce the energy required.”

“We are improving the efficiency of the electric systems all the time, but the main problem is that the all-electric truck is about four times more expensive to purchase than a diesel powered chassis so if there are no additional government grants/incentives etc it makes it difficult to justify. The launch of the AK48e at Bauma was more of a statement that we are ready to produce the full electric version if required, but over the next few years the AK48 will still be available with a diesel engine. We have to wait until governments mandate the use of electric machinery or that all-electric chassis prices come down significantly. However, there is still some demand for all-electric cranes - we are in negotiations for an AK48e at the moment with a customer in the Netherlands as well as Switzerland.”



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a Klaas K950 RHX

A TOUCH OF KLAAS

Over the past decade the UK has gone from being almost zero to one of the world's largest markets for aluminium boomed truck cranes. While companies such as Berry Cranes pioneered the concept, many new companies are now discovering the benefits. South Yorkshire based Highcliff Engineering purchased its first aluminium crane, a Klaas K950 RHX, last year. Mark Darwin checked out how it was getting on.

Based in Mexborough, near Doncaster, Highcliff Engineering started out in 1983 as a steel fabrication company. It acquired its first crane in 2000 to help with steel erection, and in the 22 years since has evolved into purely a crane rental business.

Until last year Highcliff's fleet was limited to 30 to 50 tonne All Terrains including a PPM 350-2, a Terex AC35L, a Tadano Faun ATF40G2 and Demag AC50-1. But why purchase the Klaas?

Managing director Lee Wolstenholme said: "When we were looking at fleet renewals in 2021, we had a major issue with Highways England and the use of the ESDAL (Electronic Service Delivery for Abnormal Loads) system used to plot the crane route to jobs. Working around West Yorkshire are lots of areas where All Terrain cranes are not permitted. Unfortunately, there is not enough structural information available on the bridges and the whole system needed updating. The problem meant we were having to re-route all the time as local councils did not want the cranes driving through the towns and villages directing them to use the motorways. There is a private routing system that is not free to use, but it sends information in a different format and so the users of that system were not getting refused."



Lee Wolstenholme

"This problem meant we needed to look for cranes with lower axle weights. Also, around that

time - April 2022 - we were no longer able to use red diesel and together with increasing fuel prices we were not able to pass on all the increased costs to the customers and had to look at other solutions."

Highcliff purchased its 40 tonne Tadano in 2015 paying £280,000. The equivalent now would be closer to £500,000! Highcliff Engineering therefore decided to purchase the seventeen tonne, three axle Klaas 950RHX which solved the various travel and cost related issues.

"A lot of our work is lifting roof trusses and hot tubs, loads where the aluminium truck crane comes into its own. It was cheaper to purchase, is more fuel efficient, quicker on the road - 56mph rather than 40mph for an AT - has lower emissions with a greener engine and a hybrid pack which can be plugged into a three phase outlet on site, and most importantly at less than six tonnes per axle it does not have any route restrictions."

The crane has a maximum capacity of five tonnes at seven metres radius and nine metres lift height. The maximum hook height is 43.5 metres at which it can handle 350kg, or it can take 750kg to a 25.5 metre radius and a height of 32.5 metres.

"We are new to aluminium truck cranes and therefore chose a mid-range model," he said. "It can compete with a 40 to 50 tonne AT at maximum radius and even go a bit further. It is generally more compact with less tail swing allowing it to work in tighter spaces. The Klaas also has 360 degree continuous slew a feature the Böckers we looked at did not have. I also like



the Klaas point to point system that remembers picking up a load and where it is placed."

Highcliff is now looking to renew one of its All Terrains. "I was disappointed in the new Tadano 40 tonner in that it uses the old Terex cab rather than the new Tadano cab. Perhaps we will buy another Klaas - something like the K1003 - but this won't be until next year." ■

WHAT IS AN ABNORMAL LOAD IN THE UK?

An 'abnormal load' is a vehicle that has:

1. A Gross Vehicle weight of more than 44,000kg
2. Axle loads of more than 10,000kg for a single non-driving axle and 11,500kg for a single driving axle
3. An overall width of more than 2.9 metres and or a rigid length of more than 18.65 metres.



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BE FAIR AND DO A GOOD JOB

UK based A-Lift Crane Hire is unusual in that it runs both Klaas and Böcker aluminium cranes in its fleet. Formed in 2001 by owner Dave Robson, the company is based in Wellingborough and has built a business providing housebuilders in Northamptonshire and surrounding counties with their lifting equipment.

The company currently has four aluminium truck cranes in its eight crane fleet, two Böckers - a six tonne AK46 and 1.5 tonne AK32 - and two Klaas - a six tonne K1003 and a five tonne K950 RHX. It also has a Klaas K700RSX on order for delivery in July and another K950 for 2024.

BUT WHY THE K700RSX?

"I really wanted the K950, but the lead time was almost two years, while the K700 could be delivered this year," says Robson. "I also had to think about cost and the K700 is £110,000 cheaper at about £190,000."

Robson is very conscious of maintaining a financially tight company, owning most of his cranes outright and with small loans on two others.

"I will sell my 2015 Böcker AK32 and a small 7.5 tonne Tadano truck crane which should go a long way towards paying for the new K700. The used crane market is very strong at the moment particularly for aluminium cranes."

Even though the aluminium cranes are compact and manoeuvrable the 7.5 tonne chassis can in his words 'turn on a sixpence'. Robson is keeping his other 7.5 tonner - a 1996 Kato on a Hino chassis - for the jobs that even the smallest aluminium crane cannot get to.

"I went for the Klaas rather than a Böcker because I think it is smoother and stronger, it has twin motors and two main boom lift cylinders. The Böcker AK 46 is good, but I understand they are replacing it with the AK 48, which looks like a good crane and has the 90 degree main boom which is an advantage over the Klaas. I was

very tempted by the Böcker, but the Klaas 950 is shorter, quicker on the road and easier to set up. It is also steadier and can outlift the six tonne AK 46 even though it is a five tonne capacity crane. Price wasn't an issue as they were about the same - within £10,000 of each other."

The A-Lift fleet is topped by a 70 tonne Tadano ATF 70, and then a 40 tonne Marchetti on a Scania six wheel chassis and the 7.5 tonne Kato.

"I have a 52 metre boom on the Tadano and 52 metres on the big Klaas K1003. Klaas does a 60 metre boom, but I don't need for the work we do."

Robson started the company a few years after leaving the army and then driving trucks around Northampton, developing contacts through delivering to local crane companies.

"I started with an old 20 tonne Grove AT 400 with Deutz engine that I bought for £25,000 and with the attitude of being fair and doing a good job. In the first year it cost me £20,000 in breakdown costs, but the crane kept the job going and I eventually ended up securing all the Persimmon Homes cranes in the area. 18 months later I purchased a brand new 35 tonne Terex All Terrain and within two years added a second 35 tonner and the 7.5 tonne Tadano. All the work involved installing roof trusses on housing sites."

"Persimmon is attached to Charles Church Homes, so I started doing all its work from North London up to Northamptonshire, as well as working for a lot of the local builders. Agents that moved between companies would also call me, so the work expanded rapidly, and I bought another new crane, a 40 tonne Terex, replacing an older crane. At one point I had nine cranes but now have eight."

FIRST BÖCKER

"The first aluminium crane I purchased was a 2015 1.5 tonne Blocker which will be sold shortly to partly fund the new Klaas. The price of diesel is now ridiculous, and my All Terrains only manage three miles to the gallon, while the truck cranes achieve 10 to 16 mpg currently. We used to fill all the cranes for £3,500 now it is £14,500 at the last fill up! The tyres on the ATs cost me £1,650 each. Crane prices have also increased, I bought the Klaas 950RHX last year and paid £287,000. Exactly the same crane today is £332,000 a 16 percent increase. Customers do not appreciate the pressure of running costs and purchase prices is forcing us to increase rental rates."

WHY ALUMINIUM?

"Most of our work still comes from housebuilders - particularly now that M&M and Quinto have gone. We currently cover more than 100 housing sites and cross hire to cover our work when required or when we need heavier cranes."

"We find the aluminium cranes are safer because the remote controls allow the operator work from a higher level seeing the load being placed close up. However, aluminium cranes don't like laying down packs of trusses which tends to inflict side loads. They just don't have the weight or rigidity and are a bit flexible. They are great when working indoors on load sensitive floors in industrial buildings and the luffing jib is very useful when placing an air conditioning unit which our ATs would find awkward to reach."

"They should not be used for heavier loads and in the wind a pack of trusses can take you out of radius so much easier than with a heavier All Terrain. You need to respect its abilities and to use them on the right jobs."